Information Access
IA100

State of Minnesota

Information Access Overview

Participant Guide

Information Access
Centennial Office Building
658 Cedar Street
St. Paul, MN   55155

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Contents

Module Introduction

Welcome

Welcome to the Information Access Overview module of the Information Access curriculum.

Purpose

This module will provide you with an overview of Information Access and the Information Warehouse to enable users to participate in the additional modules using the Crystal reporting tool to design reports from the Information Access Data Warehouse.

Learning Objectives

Upon completion of this module, you will be able to:

- Identify the levels of users.
- Explain the security needed to access the Warehouse
- Describe the Warehouse, where it gets its data, what data will be available, and how to access the Warehouse
- Define a table, column, and row.
- Access the Finance Web server.

Prerequisites

Before beginning this module, you should have completed:

- MAPS and/or SEMA4 training
- Familiarity with the appropriate SWAS or PPS subject area that you will access in the Warehouse.
- Demonstrated competency in the accounting/procurement and/or human resource/payroll tools
- Competency in using Windows

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1 Getting Started

Overview

Before you can get into a mainframe warehouse and start creating reports, you need a Logon ID and clearance for the Statewide Server and for the Warehouse. As a user, you will have both rights and responsibilities.

Objectives

After completing this topic, you will be able to:

- Obtain a Logon ID.
- Request a security profile for access to the Statewide Server and/or Information Warehouse.
- Identify the rights and responsibilities of a Power user and Skilled user.

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Data Warehouse Security

To access the data warehouse, you may need three types of security:

Office of Enterprise Technology (OET) LoginID - This is the same loginID and password you use for MAPS and SEMA4 and other mainframe applications. The data warehouse resides on the mainframe.

Information Access security - Access to the warehouse can be established by completing the Request For Clearance – Information Access form.

SEMA4 security - You will be limited in the data warehouse by the same SEMA4 security that you have in the SEMA4 system. SEMA security is obtained from DOER.

Obtaining a Logon ID

To access the Information Warehouse, you will use your mainframe Logon ID. If you do not have a mainframe Logon ID, you need to request one from the Office of Enterprise Management. This same Logon ID will also be used to access both the MAPS accounting tool and the procurement tool, SEMA4, the Statewide server, and other mainframe applications.

Mn-ASSIST Information Access Services of the Department of Finance will coordinate security for accessing the Information Warehouse for Department users. Agencies should determine which agency staff should be permitted to use the Warehouse. A user can have access to any accounting data in the warehouse. The user's Information Access security profile will determine what types of SEMA4 data a user can view. SEMA4 security will then determine which employees' data can be viewed. After determining the need to access the Warehouse, you will need to complete a security form and submit it to Information Access, Finance, Centennial Office Building.

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Obtaining Access to the Statewide Server

To obtain access to the statewide server, you will need to complete a security form. The form should be sent to the Security Analyst in Information Services Division of the Department of Finance.

Indicate on the form your level of access.

- Poweruser

  Your Information Access security form gets you access to the data warehouse and Crystal Reports on the Finance Web server. You may have different passwords for the mainframe and the Information Access Warehouse.

- Compiled Report user

  Your Information Access security form gets you access to the data warehouse. You may have different passwords for the mainframe and the Information Access Warehouse.

Let's look at the tasks that each level of user will perform.

Tasks and User Levels

Tasks	Poweruser	Compiled
Create a query from source data	X	
Change the parameters of existing query	X	X
Create a report from warehouse data	X	
Change sorts/breaks of existing report	X	
Print a report	X	X

Tasks and User Levels

Power User:

- Create new queries and reports from source data

- Change parameters of an existing query and report

- Create a report from warehouse data

- Change the constraints of existing queries and the sorts and breaks of existing reports

- Print reports

- Trained in several different types of reporting

- Provide internal user support and training

- First line report troubleshooting for their agency

Compiled Report User:

- Change parameters of an existing query.

- Print reports--changes nothing in the report. The reports may be constructed to allow high-level parameters.

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What information will the user be able to access?

Agency security officers must decide if the users need access to the following categories:

- MAPS

- SEMA4
    - Labor Distribution
    - Roster Staffing
    - Payroll History
    - Employee Information
    - Salary Projections

MAPS

If the user is given access to accounting and procurement information, they will be allowed to work with *public* data in the Warehouse.

If the user is given access to customer and vendor information, they will be allowed to work with *private* data in the Warehouse.

SEMA4

If the user is given access to SEMA4 information in the Warehouse, they will be restricted to the *same* level of access in their SEMA4 system security profile. For example, a user may be allowed to view position information but not private employee information with their SEMA4 security profile; their access to the information in the Warehouse will then also be restricted to position information-- they will not be allowed access to private data.

If the user does not normally access SEMA4 production data, a security clearance will still be needed to establish a security level for the Warehouse.

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2 Information Warehouse

Overview

What if ...

You had at your fingertips complete data from all of your financial and management systems?

You could hit one key on your computer and see a screen fill with current, accurate information sorted for any time period?

You could ask a question in easy-to-understand terms and get an answer within seconds?

You could create and execute inquiries not confined to pre-programmed responses?

Minnesota's Information Warehouse is a collection of standardized, summarized snapshots of transaction data extracted from MAPS and SEMA4 to support end users in their decision support and management reporting needs.

The Information Warehouse ensures consistency and integrity of data across the organization and provides fast, easy access to data so that better, faster decisions can be made.

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Objectives

After completing this topic, you will be able to:

- Define an Information Warehouse.
- Identify what data will be included in the warehouse.

Project Goal:

To provide agency users with timely access to useful data.

Operational Systems:

- system-specific transaction data
- transaction-driven database design
- predictable user access patterns
- on-line application function

Information Warehouse:

- includes derived data
- analysis-driven database design
- unpredictable user access patterns
- ad-hoc decision support function

What is in an Information Warehouse?

The Warehouse is a database of information, gathered from various operational systems, and designed specifically to support decision-making. MAPS and SEMA4 are tuned to process transactions, paychecks, and perform ledger and other updates to keep the entire system synchronized.

The Warehouse stores vast amounts of information from MAPS and SEMA4 and is organized to process information inquiries as quickly as possible. Different types of information will be added to the Warehouse in phases. Information will be fed to the Warehouse on a regular basis from MAPS and SEMA4 and data will be accurate and up-to-date.

Is the Information Warehouse data different from the source system data?

The data in the Information Warehouse is copied or derived from the data in the source systems. But the Warehouse is designed to work quite differently from the operational systems.

Remember, the operational systems are tuned to **process transactions**, and most screen formats within the systems are designed for data entry. The Warehouse stores information from multiple operational systems and is organized to **process information inquiries** as quickly as possible. The Information Warehouse is not a shadow database and does not include all data from source systems. In the Warehouse, users will access information with which they are familiar, however, the formats of the information, and the method of accessing the information will be different. The Warehouse data can be viewed on tables made of rows and columns.

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Why do we need a Warehouse?

We need a warehouse for several reasons.

- Operational data is stored in multiple formats, in multiple data structures, with multiple names, and inconsistent values across systems.

- Operational data structures are designed for fast on-line entry and update of data by applications.

- Warehouse data is designed to accommodate ad-hoc information requests tuned for reading large amounts of data quickly without requiring the end user to join multiple files and tables.

- Warehouse data is structured to contain versioned historical summarized data and its metadata (the description of the structure, content, keys, indexes, etc. about data) to provide trend analysis reporting.

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In the Information Warehouse there are no pre-formatted screens and no menus of functions.

Users will be able to view a list of all the various tables in the Warehouse. Examples of some of the tables included are the Appropriation table, Allotment table, and Expense Budget table.

Using the query tool features, users will select tables of interest from the database's list of tables. These tables will include pieces of information (data elements) from these tables to build custom reports. The tables in the Warehouse may not include every field from the on-line table and may include data elements derived from ledgers or other tables and not necessarily displayed in the on-line system.

Tools that will be used

Users will access the data in the Warehouse by using software products called query tools.

Any ODBC compliant tool can be used to access the data warehouse. These include Microsoft Access, Excel, Lotus, Paradox.

Crystal Reports is provided to all Powerusers. Training for the data warehouse is provided in Crystal Reports.

Tables, Columns, and Rows

Allotment

Agy#	FY	Allotment
R29	1996	1000
R29	1997	3000
H55	1997	2000

AGY#	FY
R29	1997

Agency

Agy#	FY
R29	1996
R29	1997
H55	1997

The Information Warehouse is a Relational Database

A database is an organized collection of information or data. In a *relational* database, data is perceived to exist in one or more tables, each containing a specific number of *columns* and any number of *rows*. Each column in a row is related in some way to the other columns.

An address book is a simple example of a database. It organizes data about people in specific categories: names, phone numbers, and addresses.

If you structure an address book into a table, you might put names in one column, addresses in another column, and phone numbers in yet another column, etc. For each person in the address book you add a row to the table; entering their name, address, and phone number into its appropriate column.

Linking tables

A relational database allows you define a relationship (called a "link" or "join") between different tables. You can use a link operation to access data from more than one table, or to create a view that presents data from more than one table.

In this example, the Allotment Table and Agency Table have common data in two columns (Agency# & Fiscal Year) and this enables us to link other columns in the two tables -- Allotment Amount -- together.

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Structured Query Language (SQL)

The query language that will be used is SQL.

Most relational database management systems (RDBMS) use SQL, which is a powerful, easy-to-use, standardized language for defining and manipulating data in a relational database.

In accordance with the relational model of data, the database is perceived as a set of tables. Relationships are represented by values in tables and data is retrieved by specifying a result table that can be derived from one or more tables.

Single SQL statements perform the same functions as many lines of conventional code. The query tools that can access data in the Warehouse generate SQL statements that are sent to the mainframe. These statements can be altered by the user if necessary and reviewed for accuracy. You can use SQL to access and manipulate data, often without having to write application programs.

All executable SQL statements must be prepared before they can be executed. The result of preparation is the executable or *operational form* of the statement.

Often, a query tool will generate the SQL code based upon the user's choices of tables, columns, and parameters.

**SQL SELECT
   COMMAND CLAUSES**

SELECT

   COLUMN1, COLUMN2, COLUMN3

FROM

   TABLE 1

WHERE

   COLUMN1 OPERATOR VALUE

ORDER BY

   COLUMN DESC

SQL Statements

SELECT The SELECT clause indicates specific data items to retrieve from database tables.

FROM The FROM clause specifies the sources of database fields indicated in the SELECT clause.

WHERE The WHERE clause has two purposes:

- To specify record selection criteria
- To specify join criteria

ORDER BY Specifies the sequence in which the rows are retrieved.

Example: AGENCY_NBR DESC (ascending)

GROUP BY Retrieves a set of summary data.

Managers Financial Report

Labor Distribution

Payroll History

Employee Reporting

Procurement

Salary Projections

What is in the Information Access Data Warehouse?

At this time, there will be information in the Warehouse to run the following reports:

- Managers Financial Report (MFR)

- Labor Distribution

- Payroll History

- Employee Reporting

- Salary Projections

- Procurement

The MAPS accounting tool is the primary source for the Managers Financial Report (MFR) data.

SEMA4 is the primary source for Labor Distribution, Salary Projections, Payroll History, and Employee Information.

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Who will support the users of the Information Warehouse?

The first number to call if you have a problem would be the Mn-ASSIST Help Desk at (651) 215-0488 or e-mail us at iahelpdesk.Finance@state.mn.us.

For complex questions, the Information Access Services section within Mn-ASSIST division of the Department of Finance will be able to answer other questions.

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3 Crystal Reports & Metadata

What are the Crystal Reports on the Finance Web server*?*

A variety of reports have been created in Crystal Reports and are available for Powerusers to use and distribute. A list on available reports is included in this manual. Available reports include several budgetary and expenditure reports, metadata reports that define data within the warehouse, labor distribution and leave activity reports. Powerusers can copy these reports from the Finance Web Page, change the selectors to reflect their agency and distribute the reports to users in their agency.   The reports can be distributed by creating an icon on the user's desk. The user then clicks on the icon to run the report. The user does not need training and does not need a full copy of Crystal Reports on his/her PC.

Crystal

- IA Crystal 8.5 Registration
- Crystal Reports Professional 8.5
- Description of Crystal Report Examples
- Crystal Report Examples ⬅
- Training Use Only

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How do I copy a report from the Web server?

Instructions for attaching to DOF-Web server are included in this manual. Access the DOF- Crystal Reports Web server by accessing the Department of Finance web page at www.finance.state.mn.us. Click on Statewide Systems > Information Access > Crystal Report Examples, which is found under the title "Resources Available". You will then be asked to enter your Information Access username and password. Next, a list of folders appears that includes various types of information about the available reports.

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How to copy a report from the Web server

When you have successfully logged into the web server, a table including the folder name, report id, report title, report description and the tables used in each report will appear.   Each folder name contains reports that can be used by any Poweruser. The reports are grouped into these folders:

ACCTNG- includes accounting reports

AGENCY- includes reports that are agency specific

AR – includes accounts receivable reports

BENEFITS – includes reports related to employee benefit plans

DOER_TNG – includes training reports created by the Department of Employee Relations training division

DOF_TNG – includes training reports initially created for Department of Finance training needs

EMPLOYEE - includes human resources reports

LBR_DIST - includes labor distribution reports

METADATA – includes reports containing data about the data in the warehouse

MISC - includes any other reports such as the form template used in class

PAYROLL - includes all payroll reports

**PRCRMT –** includes commodity reports, expenditure by commodity reports

SLRY_PRJ – includes a salary projection report

SPENDPLN – includes reports relating to agency budgetary structure

> **Step 1:** You can open any report by clicking on it's report id link.
>
> **Step 3:** Select "Open this file from it's current location", to open the report.
> Select "Save this file to disk" to save a copy of the report to your own directory.
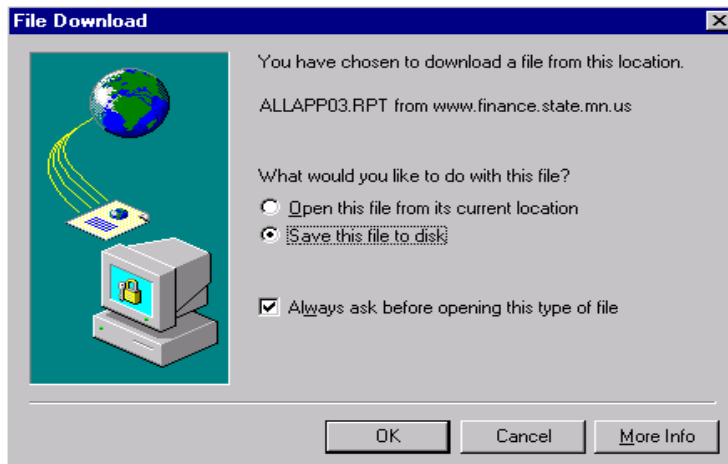
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Step 4: Under **Save in** select the drive that contains the directory that you want to save your file to. Double-click on the folder that you wish to save your report to. Then under File Name, change the file name to the name that you want to call this report. Click on Save to complete the save.

Step 5: Open your saved report.

Step 6: Choose **Report: Select Records Expert** to edit the selection parameters for your agency. Remember to use upper case for AGENCY_NBR.

Step 7: Choose **Show Formula** in the lower right corner to view all of the selection criteria. You must edit the selection criteria so that all of the selectors apply to your agency.

Step 8: You may now click on **OK** and run the report. Remember to save your selectors.

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What is Metadata?

Metadata is data about the data in the data warehouse. Every Poweruser should become familiar with the reports in the metadata folder. The metadata folder includes Crystal reports that define tables, views, elements, indexes, joins, security and the data dictionary. To run a metadata report, click on the report id link of report you would like to run. Available reports include:

elmnt - for each element in the data warehouse, lists the element name, description, valid values, element length, element type and a cross reference listing of the tables or views in which the data element is used.

elmtindx – lists all indexes that an element is included in.

joinkeys - lists the key fields for each of the warehouse tables.

S4Page – lists fields on selected SEMA4 web page/s and identifies the SEMA4 source table and SEMA4 source element used for a page field.

S4Page2Wh – Shows where the source data (for a SEMA4 Web Page field) is located in the warehouse.

S4Wh2Page - Shows SEMA4 Web Page/s where Warehouse View elements may be used.

tablelmt - for each warehouse table, lists the DB2 element names, and ties them to a source system element, table and system.

tablindx - gives a listing of all indexes set up for a table, the data elements that make up the index, the order of the elements, and the order of access.

tablinfo - gives a description of each table, the update frequency for each table, a count of the number of rows (records), and the last statistics date and time .

tblelora – lists all element types and their length from Oracle.

view - gives a brief description of every view in the warehouse and lists the elements in each view.

wh_dict - the data dictionary lists every view in the data warehouse, the elements within each view, indicates the join keys for each view, tells data length, data type and ties the warehouse element to the source system element and table.
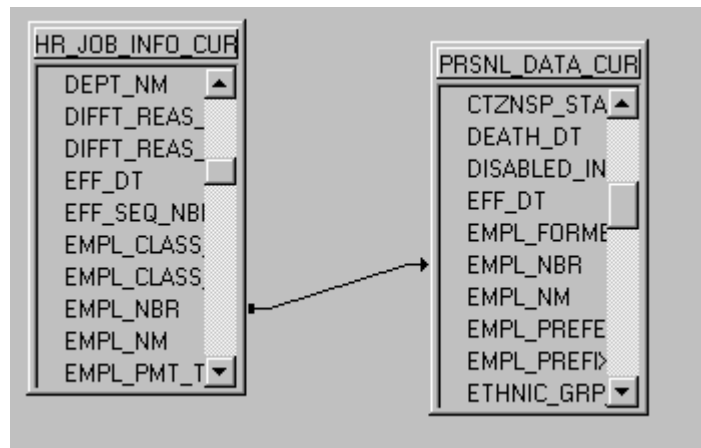
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What are elements?

Elements are similar to cells in a spreadsheet. An element contains a specific item of information and is represented by a column in a table. A list of all elements in the data warehouse can found under the report id tablelmt in the metadata folder.

What are joinkeys?

Joinkeys are the elements in each table that must be linked when you are adding a table to a report. They are similar to the key of a table that defines a unique record in the table. When you add tables to a report, you begin with your main table, which should be your most detail level information. You add secondary tables, which must be linked on their joinkeys.

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What are indexes?

An index is a feature of the data warehouse that speeds searching and sorting of data. Every table in the warehouse has at least one index, some tables have several indexes. You should select on elements that are included in an index of your report. If you have a report that is running slowly, you should check to see that you have selected and/or sorted on elements that are included in at least one of the indexes for that table. The data warehouse will choose which index to use based on which elements appear in your report. It is especially important to utilize indexes when you working with a large table, such as Expenditures or Labor Distribution. To find out what the indexes are for a table, you run the "tablindx" report in the metadata folder.

What are views?

The data warehouse is made up of tables. The user does not see the warehouse tables, but, instead, sees views of the tables. In most instances, the views and the tables are identical. However, in some cases, custom views have been set up. A list of the views, which are available in the data warehouse can be seen by running the "view" report, in the metadata folder.

What is the data dictionary?

The data dictionary lists all views in the data warehouse, the elements within each view, tells the type and length of data, gives a brief description of each element and ties the data element to the source system table and field name. The data dictionary is updated whenever new tables are added to the data warehouse. A current data dictionary has the report id "wh_dict" in the metadata folder.